

09/936,692

9

REMARKS

The Office Action of October 20, 2004 has been received and carefully reviewed. It is submitted that, by this Communication, all bases of rejection and objection are traversed and overcome. Upon entry of this Communication, Claims 1-31 remain in the application. Reconsideration of the claims as amended is requested.

At the outset, Applicants' Attorney would like to sincerely thank Examiner Szekely for all the time and courtesies extended during the telephonic interview of October 15, 2004. During the interview, the pending claims and cited references were discussed at length.

The disclosure stands objected to under 35 U.S.C. 112, second paragraph, and claims 10 and 24 stand rejected under 35 U.S.C. 112, second paragraph, as the Examiner states "methyhexan" is misspelled.

The specification has been amended to remove the incorrectly spelled "methyhexan" and recite the correctly spelled "methyhexane." Additionally, claims 10 and 24 have been amended in the same fashion. With the noted amendments to the specification and to claims 10 and 24, Applicants respectfully submit that the rejections under 35 U.S.C. 112, second paragraph, have been traversed and overcome.

Claims 1-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. According to the Examiner, the claim(s) contain subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The Examiner states that the specification is enabling for hydrophilic/hydrophobic copolymers, but does not reasonably provide enablement for a hydrophobic homopolymer.

Applicants respectfully submit that independent claims 1 and 18 have been amended to recite "the hydrophilic monomer amount ranging from about 1% to about 25% of the copolymer . . ." and "the hydrophobic monomer amount ranging from about 75% to about 99% of the copolymer. . . ." Support for these changes may be found in the specification as filed on page 13, line 19. As such, Applicants respectfully submit that the rejection under 35 U.S.C. 112, first paragraph has been traversed and overcome.

Claims 1-31 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as

09/936,692

10

the invention. The Examiner states that claim 1, line 3 contains improper Markush language. Further, the Examiner states that the phrase "between about" in claims 1, 4, 5, 11, 17, 18, 21, 25 and 31 is indefinite.

Applicants respectfully submit that claims 1 and 18 have been amended to recite "a glass material containing divalent cations, multivalent cations, or combinations thereof" to comply with the Examiner's assertion regarding improper Markush language. Support for this language may be found in the specification as filed at page 11, lines 4-8 and lines 15-17. Further, Applicants have amended claims 1, 4, 5, 11, 18, 21 and 25 to recite "ranging from about . . . to about . . ." instead of "between about," as suggested by the Examiner during the October 15, 2004 telephonic interview. Applicants respectfully submit that claims 17 and 31 do not contain the proposed indefinite language and thus have not been amended according to the Examiner's suggestion.

Claims 1-31 stand rejected under 35 U.S.C. 102(b) as being anticipated by Nakabayashi et al. (5,554,669). The Examiner states that Nakabayashi discloses a water insoluble hydrophilic/hydrophobic copolymer in claim 1 and hydrophilic/hydrophobic ratios in claims 9 and 11. Further, the Examiner states that using the copolymer as a hardening agent for glass ionomer cement is also taught in column 10, lines 37-38 (as stated further below, Applicants' invention as defined in the pending claims is not suitable as a dental cement; and as such, the '669 patent teaches away from Applicants' invention as defined in the pending claims).

Applicants respectfully submit that Nakabayashi et al. '669 teach how to **emulsify** water insoluble polymers/copolymers to make them adapted for use in hydrophilic applications. '669 does not teach or suggest a (non-emulsified) copolymer having the ratios as recited, as part of a composite composition as recited in Applicants' claims. It is submitted that an emulsion (a suspension or dispersal of tiny droplets of hydrophobic material in a hydrophilic material) is very distinct from a copolymer solution. Further, the Nakabayashi patent teaches how to make a copolymer emulsion that is used as an adhesive. Still further, the Examiner's very statement that using the copolymer as a hardening agent for glass ionomer cement is also taught in '669 at column 10, lines 37-38 shows that '669 is teaching water soluble applications of '669's *emulsions of polymer(s)*.

In sharp contrast, Applicants are reciting ionomer composite compositions that may be adaptable for use in substantially water insoluble dental applications. See, for example, the

09/936,692

11

specification as filed at page 9, lines 14-17, which states that examples of water insoluble compositions include preformed structure for dental and osseous tissue repair applications.

Since '669 does not teach or suggest a copolymer having the monomeric ratios as recited in Applicants' claims 1 and 18, it is submitted that Applicants' invention as defined in amended claims 1 and 18 is not anticipated, taught or rendered obvious by the cited references, either alone or in combination, and patentably defines over the art of record.

Claims 1-31 also stand rejected under 35 U.S.C. 103(a) as being unpatentable over Nakabayashi et al ('669) in view of by Tezuka et al. (4,089,830), Wilson et al. (4,758,612), Wilson et al. (4,569,954), Englebrecht (4,872,936), Okayabashi et al. (5,051,453) Kato et al. (5,520,725) or National Res Dev Corp (GB 1,507,981). The Examiner states that the secondary references teach the glass ionomer compound claimed by the Applicants with hydrophilic and hydrophobic polymers. The Examiner contends that it would have been obvious to one having ordinary skill in the art, at the time the invention was made, to use the glass ionomers recited by the secondary references with the copolymer revealed by Nakabayashi et al.

Applicants respectfully submit that Nakabayashi et al. teach an emulsion of a water insoluble polymer/copolymer adapted for use in hydrophilic applications (such as adhesives and cements), **not** a composite containing a copolymer. As previously indicated, an emulsion is distinct from a copolymer. However, assuming *arguendo* that one skilled in the art would combine the cited references, such combination would not render the ionomer composite composition as recited by Applicants because the Nakabayashi reference reveals **copolymer emulsions**, not copolymers as asserted by the Examiner.

Further, Wilson et al. ('612) teaches an **emulsion** that may be incorporated within a hydrophilic cement composition, not a copolymer as recited in Applicants' claims. It is reiterated that an emulsion is distinct from a copolymer solution, and does NOT form a copolymer having the monomeric ratios as recited in claims 1 and 18—if it did, it would no longer function as a cement composition, thus destroying the stated purpose of Wilson. Regardless, this emulsion is only added where the composition is intended for use in a low humidity environment, and although Wilson discloses the addition of 5-70% by weight of an emulsion of a "substantially water-insoluble polymer", the range refers to the weight percent of emulsion added and does not refer anywhere to an amount of water-insoluble polymer. Again, the addition of the emulsion

09/936,692

12

would not be significant enough to change the hydrophobicity of the dental cement, which is hydrophilic in order to function as intended.

The remaining references also disclose water soluble/aqueous compositions. Contrary to the Examiner's prior assertion that the references "mention Applicants' glass ionomers and polymers, among them hydrophilic-hydrophobic copolymers, which can be used in dental cement" (emphasis added), it is submitted that the mere mention (almost in passing) of copolymer(s) which may contain a hydrophobic monomer does not anticipate or render obvious Applicants' invention as defined in amended claims 1 and 18 which recites a copolymer having "the hydrophobic monomer amount ranging from about 75% to about 99% of the copolymer."

As stated above, and as reiterated here, it is respectfully submitted that a hydrophilic-hydrophobic copolymer as defined in Applicants' claims would not function properly as dental cement.

None of the references, either alone or in combination, disclose a copolymer having between about 75% and about 99% of a hydrophobic monomer. The purpose and teaching of each of the cited references is to provide a composition useful for dental cement only—this actually **teaches away** from Applicants' invention as defined in amended claims 1 and 18. If the skilled artisan were to use a composition as defined in Applicants' claims 1 and 18, it is submitted that the composition would no longer function as dental cement. As such, this would destroy the stated purpose of the patentees' inventions. Thus, it is submitted that the skilled artisan would not be led to, and in fact would be led away from forming a composition utilizing a copolymer having between about 75% and about 99% of a hydrophobic monomer.

For all the reasons stated above, it is submitted that Applicants' invention as defined in amended claims 1 and 18 is not anticipated, taught or rendered obvious by the cited references, either alone or in combination, and patentably defines over the art of record. Claims 2-17 and 19-31 depend ultimately from one of claims 1 or 18. It is submitted that, through this dependency, Applicants' invention as defined in claims 2-17 and 19-31 also is not anticipated, taught or rendered obvious by the cited references, either alone or in combination, and patentably defines over the art of record.

In summary, it is submitted that claims 1-31 are now in a condition suitable for allowance, notification of which is respectfully requested. Further and favorable consideration is requested.

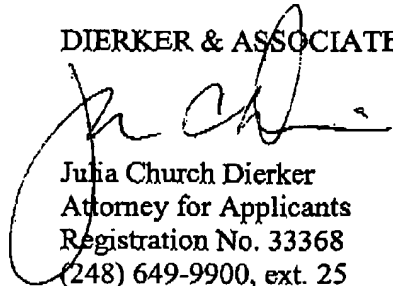
09/936,692

13

If the Examiner believes it would expedite prosecution of the above-identified application, he is cordially invited to contact Applicants' Attorney at the below-listed telephone number.

Respectfully submitted,

DIERKER & ASSOCIATES, P.C.



Julia Church Dierker
Attorney for Applicants
Registration No. 33368
(248) 649-9900, ext. 25
juliad@troypatent.com

3331 West Big Beaver Rd., Suite 109
Troy, Michigan 48084
Dated: January 18, 2005
JCD/JRO/jro